

New species and records of Psocoptera (Insecta) from Kyrgyzstan

Edward L. MOCKFORD

Department of Biological Sciences, Illinois State University, Campus Box 4120,
Normal, Illinois 61790/4120, USA.

E-mail: elmockf@ilstu.edu

New species and records of Psocoptera (Insecta) from Kyrgyzstan. -

Eleven species of Psocoptera are recorded for Kyrgyzstan, raising the number known from that country to twelve. Two species are described as new, one in the genus *Asiopsocus* Günther and the other in the genus *Mesopsocus* Kolbe. The biogeographic affinities of the psocid fauna are discussed. They are primarily with the eastern European steppe shrub and grassland fauna. A key to the known species of *Asiopsocus* is included.

Keywords: Kyrgyzstan - Insecta - psocids - Psocoptera - systematics - biogeography.

INTRODUCTION

Psocoptera collected on three expeditions to Kyrgyzstan by personnel of the Illinois Natural History Survey were sent to me for study. To my knowledge, there is only one previous record of a psocid from Kyrgyzstan, the near-cosmopolitan, largely domestic *Trogium pulsatorium* (Linn.) recorded by Jacobson & Bianchi (1904). Thus, the eleven species reported here give us a first view of the native psocid fauna of the country. Two of the species are new, one of the genus *Asiopsocus* Günther and the other of the genus *Mesopsocus* Kolbe, and are here named and described.

MATERIAL AND METHODS

The material consists of approximately 615 adult specimens plus associated nymphs. Collecting was by vacuum machine, sweeping, Malaise trapping, and beating branches in grass and shrub-land, and in woodland of spruce and maple. The material will be deposited in the Illinois Natural History Survey, Champaign, Illinois, except for two paratypes of each of the two new species and some specimens (sample 98-15) of *Asiopsocus mongolicus* deposited in the Natural History Museum, Geneva, Switzerland.

For the new species, color was observed with a dissecting microscope by direct light on specimens preserved in 80% ethyl alcohol. Measurements are in μm . The following abbreviations are used: BL = body length; FW = fore wing length, HW = hindwing length; F = length of hind femur; T = length of hind tibia; t1, t2, t3 = length

of hind first, second and third tarsomeres respectively; f1-f4 = length of each of first four flagellomeres; IO = least distance between compound eyes; d = lateral diameter of a compound eye; v1, v2, v3 = first, second and third valvula of ovipositor respectively.

Collecting stations, listed below, are numbered in chronological order by year (98-01..., 99-01..., 00-01...) and these numbers are entered in the "material examined" section for each species. Each entry includes the locality with coordinates, the date, the collector, the mode of collection, and the field collection number. Collectors' names are abbreviated as follows: JKB = John K. Bouseman, CHD = C. H. Dietrich, MRL = M. R. Lupei, DM = D. Milko. For each species also the previously known range is indicated with appropriate literature references. Synonymies include only the original description and the reference to the current name. Complete synonymies may be found in Lienhard & Smithers (2002).

COLLECTING STATIONS (Kyrgyzstan)

- 98-01. Dzhahal-Abad, Toktogul Reservoir, S coast, elev. 927 m, 41° 46' 54" N 72° 59' 30" E, 18 August 1998, CHD coll., Malaise trap, 98-013-07.
- 98-02. Same loc., date, and collector, sweeping, 98-013-09.
- 98-03. Same loc., date and collector, vacuum, 98-013-08.
- 98-04. Dzhahal-Abad, At-Ojnoksky Mt. Ridge, Kurpsaj Ravine, elev. 924 m, 41° 30' 55" N 72° 19' 43" E, 20 August 1998, JKB coll., beating dead branches.
- 98-05. Same loc. and date as 98-04, CHD coll., Malaise trap, 98-014-08.
- 98-06. Dzhahal-Abad, Urumbash Pass, elev. 3047 m, 41° 17' 23" N 73° 37' 31" E, 27 August 1998, CHD coll., vacuum, 98-022-01 and 98-022-07.
- 98-07. Dzhahal-Abad, jct. Kokerim & Kugart Rivers, elev. 1247 m, 41° 26' 32" N 73° 57' 7" E, 28 August 1998, CHD coll., vacuum, 98-023-01 and 09-023-04.
- 98-08. Naryn, Alabuga River 25 km W Baetovo, elev. 1700 m, 41° 17' 47" N 74° 39' 20" E, 29 August 1998, JKB coll., beating dead branches.
- 98-09. Same loc. and date as 98-08, CHD coll., vacuum, 98-025-01.
- 98-10. Naryn, Ozhaman-Davan River ca. Saz, elev. 1826 m, 41° 17' 31" N 74° 42' 29" E, 29 August 1998, CHD coll., vacuum 98-026-02.
- 98-11. Issyk-Kul, Barskaun Ravine 16 km S Barskaun, elev. 2320 m, 42° 2' 47" N 77° 35' 52" E, 2 September 1998, JKB coll., beating *Picea*.
- 98-12. Same loc. and collector as 98-11, 3 September 1998, beating *Picea*.
- 98-13. Same loc., date, and collector as 98-12, beating *Rosa*.
- 98-14. Same loc. as 98-13, 4 September 1998, CHD coll., Malaise trap, 98-036-09.
- 98-15. Same loc., date, and collector as 98-14, vacuum, 98-036-08.
- 98-16. Same loc., date, and collector as 98-15, ex *Picea*, vacuum 98-036-11.
- 98-17. Issyk-Kul, S shore Issyk Kul Lake, 10 km E Kadzhi-Saj, elev. 1675 m, 42° 10' 33" N 77° 18' 55" E, 5 September 1998, CHD coll., Malaise trap, 98-040-10 and 98-040-11.
- 98-18. Same loc., date, and collector as 98-17, sweeping, 98-040-09.
- 98-19. Same data as for 98-18 except sweeping *Phragmites communis*, 98-040-12.
- 98-20. Same loc., date, and collector as 98-19, vacuum, 98-040-03 and 98-040-05.
- 98-21. Same loc. and date as 98-20, JKB coll., beating desert shrubs.
- 98-22. Issyk-Kul, Kunur Olen Valley ca. Kel-Ter, elev. 1938 m, 42° 5' 51" N 76° 40' 14" E, 6 September 1998, CHD coll., vacuum, 98-041-02.
- 99-01. Talas, 18 km WSW Taldy Bulak, elev. 1930 m, 42° 26' 31" N 72° 49' 12" E, 15 June 1999, CHD coll.
- 99-02. Talas, ca. Boo-Terek, elev. 1000 m, 42° 32' 15" N 71° 45' 59" E, 15 June 1999, CHD coll., vacuum, 99-51-01.
- 99-03. Dzhahal-Abad, ca. jct. Kra Kyzmak & Chatkal R., elev. 2240 m, 42° 4' 0" N 71° 35' 41" E, 19 June 1999, JKB coll., beating dead branches.
- 99-04. Same loc. and date as 99-03, CHD coll., sweeping, 99-58-13.
- 99-05. Dzhahal-Abad, Aygr-Dzhal, elev. 1640 m, 41° 44' 11" N 71° 0' 46" E, 20 June 1999, CHD coll., 99-59-01.

- 99-06. Dzhalal-Abad, Chandalash R., 6 km N jct. Chatkal R., elev. 1630 m 41° 44' 19" N 70° 52' 22" E, 20 June 1999, CHD coll., vacuum, 99-60-04.
 99-07. Same loc. and date as 99-06, JKB coll., beating *Acer*.
 99-08. Same loc. as 99-07, 20-21 June 1999, CHE coll., Malaise trap, 99-60-12.
 99-09. Same loc. as 99-08, 21 June 1999, DM coll.
 99-10. Same loc. and date as 99-09, CHD coll., 99-60-14.
 99-11. Same data as for 99-10 except vacuum, 99-60-09.
 99-12. Dzhalal-Abad, At-Ojnoksky Ridge, Kurpsaj Ravine, elev. 924 m, 41° 30' 55" N 72° 19' 43" E, 23 June 1999, CHD coll., vacuum, 99-11-01.
 99-13. Osh, Karakuldzha, Lajsu Ravine, elev. 1815 m, 40° 31' 20" N 73° 37' 10" E, 25 June 1999, CHD coll., vacuum, 99-18-01.
 99-14. Same loc., date, and collector as 99-13, vacuum, 99-18-06.
 99-15. Dzhalal-Abad, 10 km W Dzhalal-Abad, elev. 807 m, 40° 55' 57" N 70° 53' 35" E, 27 June 1999, CHD coll., vacuum, 99-15-06.
 99-16. Dzhalal-Abad, jct. Kokerim & Kugart Rivers, elev. 1247 m, 41° 26' 32" N 73° 57' 7" E, 27 June 1999, CHD coll., vacuum, 99-23-06.
 99-17. Naryn, Karakudzhur R. 5 km N Sary-Bulak, elev. 2300 m, 41° 59' 11" N 75° 43' 8" E, 2 July 1999, JKB coll., beating dead branches.
 99-18. Same loc. and date as 99-17, CHD coll., vacuum, 99-77-01.
 99-19. Issyk-Kul, S shore Issyk Kul, 10 km E Kadzhi-Saj, elev. 1675 m, 42° 10' 33" N 77° 18' 55" E, 2 July 1999, CHD coll., sweeping, 99-40-01.
 99-20. Same loc., date, and collector as 99-19, vacuum, 99-40-02.
 99-21. Same loc. and collector as 99-20, 2-6 July 1999, Malaise trap, 99-40-M1 and M2.
 99-22. Same loc. as 99-21, 3 July 1999, JKB coll., beating desert shrubs.
 99-23. Issyk-Kul, S slope Ak-Ahyrak Ridge, elev. 3880 m, 41° 41' 37" N 78° 17' 40" E, 3 July 1999, CHD coll., vacuum, 99-81-01.
 99-24. Issyk-Kul, S shore Issyk Kul, 10 km E Kadzhi-Saj, elev. 1675 m, 42° 10' 33" N 77° 18' 55" E, 5 July 1999, CHD coll., 99-40-09.
 99-25. Same loc., date, and collector as 99-24, sweeping, 99-40-04.
 99-26. Same loc., date, and collector as 99-25, vacuum, 99-40-03 and 06.
 00-01. Dzhalal-Abad, 18 km WSW Kazarman, elev. 1550 m, 41° 22' 1" N 73° 48' 37" E, 15 July 2000, CHD coll., vacuum 00-100-12.
 00-02. Same loc., date, and collector as 00-01, vacuum, 00-100-07.
 00-03. Same loc. and date as 00-01, MRL coll., sweeping, 00-100-02 L.
 00-04. Same loc. as 00-01, 15-16 July 2000, CHD coll., Malaise trap, 00-100-M1.
 00-05. Same loc., date, and collector as 00-04, Malaise trap, 00-100-M2.
 00-06. Naryn, Alabuga River 25 km W Baetovo, elev. 1700 m, 41° 17' 47" N 74° 39' 20" E, 16 July 2000, CHD coll., vacuum, 00-025-01.
 00-07. Issyk-Kul, S shore Issyk Kul Lake, 10 km E Kadzhi-Saj, elev. 1675 m, 42° 10' 33" N 77° 18' 55" E, 22 July 2000, MRL coll., sweeping, 00-040-01L.
 00-08. Same loc., date, and collector as 00-07, sweeping, 00-040-02L.
 00-09. Same loc., date, and collector as 00-07, sweeping, 00-040-03L.
 00-10. Same loc., date, and collector as 00-07, sweeping, 00-040-05L.
 00-11. Same loc. and date as 00-07, CHD coll., vacuum, 00-040-01.
 00-12. Same loc., date, and collector as 00-11, vacuum, 00-040-02.
 00-13. Same loc., date, and collector as 00-11, vacuum, 00-040-03.
 00-14. Same loc. as 00-13, 23 July 2000, MRL coll., sweeping, 00-040-09L.

SYSTEMATICS

SUBORDER TROCTOMORPHA

LIPOSCOLIDIDAE

Liposcelis decolor (Pearman)

Troctes bicolor var. *decolor* Pearman, 1925: 126.

Liposcelis decolor (Pearman), Badonnel, 1986: 72.

Material examined. 99-12, 4 ♀.

The species is cosmopolitan in distribution (cf. Lienhard, 1998), Günther (1974) recorded it from Mongolia under the name *L. terricolis* Badonnel.

SUBORDER PSOCOMORPHA

ASIOPSOCIDAE

Asiopsocus mongolicus Günther

Fig. 1

Asiopsocus mongolicus Günther, 1968: 128.

Material examined. 98-11, 12 ♂, 65 ♀, 2 nymphs; 98-12, 8 ♂, 24 ♀; 98-13, 1 ♂, 2 ♀; 98-15, 2 ♂, 6 ♀; 98-16, 2 ♀; 98-20, 1 ♂; 98-21, 4 ♂, 8 ♀, 37 nymphs; 99-20, 1 ♂, 1 ♀; 99-21, 2 ♂; 99-22, 1 ♂, 1 ♀; 99-24, 1 ♀; 00-11, 1 ♀; 00-12, 1 ♀.

The species is previously known only from Mongolia (Günther, 1968, 1974). The present records extend the range by approximately 1300 km southwestward.

Characters separating *A. mongolicus* from *A. meridionalis* Lienhard (1981, 1990 from Spain and Oman) hold completely in the Kyrgyzstan material (i.e. $f3 > f4$ in male, bases of pretarsal claws bare of microtrichs, appendage of base of pretarsal claw very short, lacinial tip not denticulate, number of trichobothria of male paraproctal sensorium 23-24, femora of females lacking dorsal spots). Therefore, the hypothesis is favored that the two named forms are distinct species. The spermatheca is illustrated (Fig. 1), permitting comparison with that of *A. meridionalis* (cf. Lienhard, 1998, fig. 58j). The sac tapers gradually to the sheath rather than forming a long neck, and the sheath is somewhat shorter and wider than in *A. meridionalis*.

Asiopsocus spinosus sp. n. (♀)

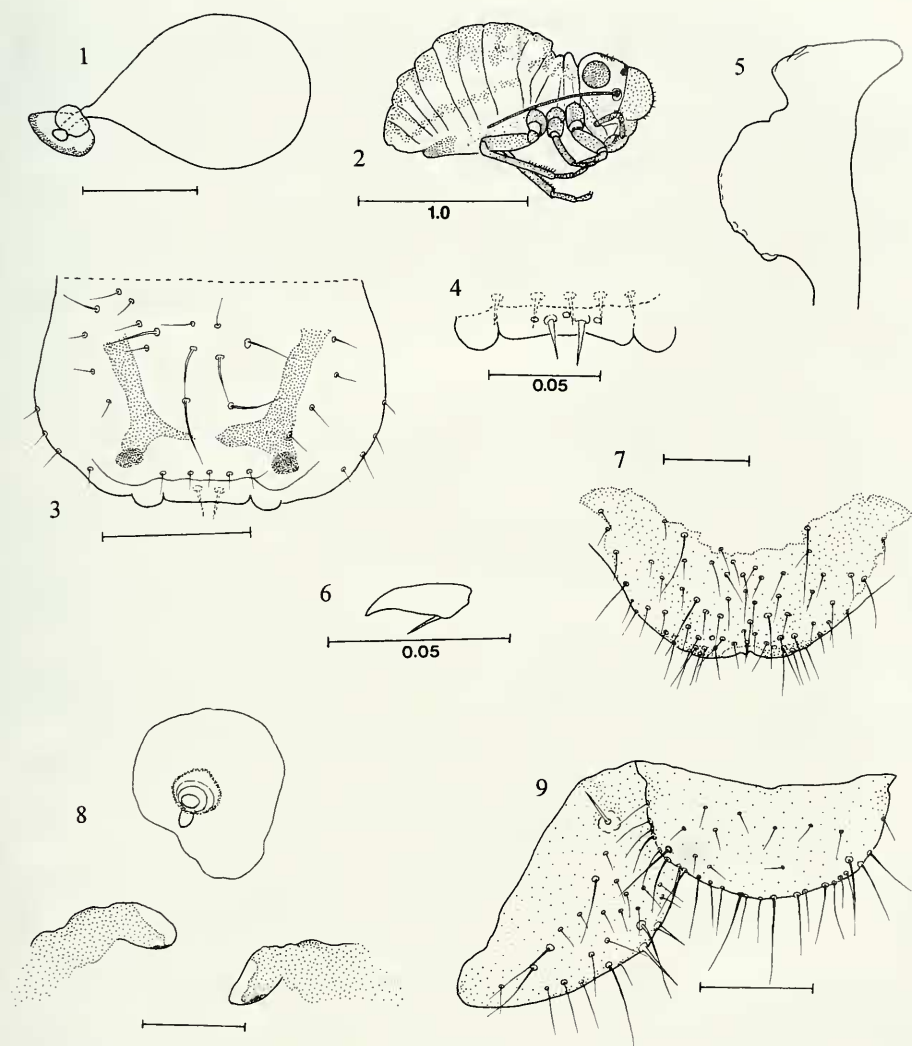
Figs 2-9

Material examined. Holotype ♀ and 12 ♀ paratypes, 99-23.

Differential diagnosis (see also key, below). Known only from female. Habitus (Fig. 2). Differing from *A. vanharteni* Lienhard (1995), *A. sonorensis* Mockford & García Aldrete (1976), and *A. tehucanus* García Aldrete & Casasola (1995) by lack of pulvillus; differing from *A. meridionalis* Lienhard (1981) and *A. mongolicus* Günther (1968) in body color, and from these two and *A. wulingshanensis* Li (2002) by lack of vestigial v1.

Color. Eyes black. Ground color of body ivory; striations of postclypeus, legs except tarsi, and band of spots across vertex between eyes tawny brown; a dark chocolate-brown strip on frons bordering postclypeus; tarsi, antennae, maxillary palpi, and subgenital plate also dark chocolate-brown. Preclunial abdominal segments with on each side, two longitudinal bands of grayish-brown (subcuticular pigment, Fig. 2), the lower band in some specimens a series of spots, one per segment; clunium, epiproct, and paraprocts variegated tawny brown and ivory.

Structural characters. Body compact with very globose abdomen (Fig. 2). Antennae shorter than body; flagellum with sparse, short, spiculate setae slanting distally. Labrum (Fig. 3) with prominent pair of diagonal pigmented bars not meeting anteriorly; distal labral sensilla: 5 anterior setae. 2 posterior setae alternating with 3 small placoids (Fig. 4). Lacinial tip (Fig. 5) lacking denticles but with a few wrinkle-



FIGS 1-9

Asiopsocus spp. 1. *A. mongolicus* Günther, female, spermatheca. 2-9. *A. spinosus* sp. n., female. 2. Habitus, lateral view. 3. Labrum; structures in dashed lines are on inner surface. 4. Distal inner labral sensilla; structures in dashed lines are on outer surface. 5. Lacinial tip (scale of fig. 4). 6. Pretarsal claw. 7. Subgenital plate. 8. Spermatheca (upper item) and ovipositor valvulae (paired lower items). 9. Epiproct and left paraproct. Scale bars = 0.1 mm unless noted otherwise.

like impressions laterally; subdistal region of lacinia greatly swollen. On all legs a longitudinal row of spine-like setae running length of tibia on inner surface and continuing on t1 as row of slender setae. Pretarsal claws (Fig. 6) bare, lacking pulvillus, with a short basal setiform appendage. Coxal organ totally absent. Subgenital plate (Fig. 7) normal for the genus. Ovipositor valvulae a pair of broad flaps (Fig. 8) well

sclerotized and pigmented on outer surface, clear and membranous distally and on inner surface. Spermatheca (Fig. 8): spermapore surrounded by round, pigmented ring, the pore leading to a short duct appearing to terminate in a thin, rounded sac; a short appendage arising from the duct. Paraproct (Fig. 9) with 2 heavy setae on free margin in middle flanking a short, slender seta; sensorium bearing a single seta on a faint basal rosette. Epiproct wide-semicircular in outline (Fig. 9).

Measurements. BL = 1470, FW = 39, HW = 26, F = 359, T = 571, t1 = 129, t2 = 103, f1 = 114, f2 = 96, f3 = 113, f4 = 99, IO = 323, d = 121, IO/d = 2.66.

Etymology. The name refers to the spine-like setae of the inner surface of the tibiae in this species. Although these structures are present in *A. mongolicus*, they are not as strong in that species.

Key to the species of *Asiopsocus*

- 1 Macropterous, abdomen slender (males) 2
- Micropterous, abdomen globose (females) 5
- 2 Closed cell of hindwing ca. 1/10 length of the wing
..... *A. tehuacanus* García Aldrete & Casasola
- Closed cell of hindwing ca. 1/4 length of the wing 3
- 3 Pretarsal claw with a slender pulvillus as well as a basal setiform
appendage *A. sonorensis* Mockford & García Aldrete
- Pretarsal claw with only a basal setiform appendage 4
- 4 Lacinial tip with numerous rounded denticles; pretarsal claw with
conspicuous basal microtrichs *A. meridionalis* Lienhard
- Lacinial tip lacking rounded denticles; pretarsal claw generally lacking
basal microtrichs *A. mongolicus* Günther
- 5 Ovipositor valvulae including a slender v1 as well as a broad flap, the
presumed v2+3; lacinial tip lacking denticles 6
- Ovipositor valvulae lacking v1, consisting only of the broader flap,
variously developed; lacinial tip with or without denticles 8
- 6 Ovipositor valvulae: v1 ca. one-half length of v2+3; v2+3 bearing a seta
..... *A. wulingshanensis* Li
- Ovipositor valvulae: v1 much shorter than half length of v2+3; v2+3
lacking a seta 7
- 7 Femora dorsally with row of dark spots *A. meridionalis* Lienhard
- Femora dorsally uniform in color *A. mongolicus* Günther
- 8 Pretarsal claw with a broad pulvillus *A. vanharteni* Lienhard
- Pretarsal claw with a slender pulvillus or none 9
- 9 Lacinial tip smooth except for slight wrinkling on outer margin; pre-
tarsal claw lacking pulvillus, with only a short basal setiform appendage
..... *A. spinosus* sp. n.
- Lacinial tip with rounded denticles its entire length; pretarsal claw with
a slender pulvillus as well as a basal setiform appendage 10
- 10 Free margin of paraproct with a spine in middle; paraproctal sensorium
with two to three short setae *A. sonorensis* Mockford & García Aldrete
- Free margin of paraproct lacking a spine; paraproctal sensorium with
four short setae *A. tehuacanus* García Aldrete & Casasola

STENOPSOCIDAE

Graphopsocus cruciatus (Linnaeus)

Hemerobius cruciatus Linnaeus, 1768: 225.

Graphopsocus cruciatus (Linnaeus), Kolbe, 1880: 125.

Material examined. 99-17, 3♂, 3♀, 1 nymph. These females are brachypterous with forewings reaching distal end of abdomen.

The species occurs throughout the Palaearctic region (Lienhard, 1998) and in North America, where it was probably introduced (Mockford, 1993).

LACHESILLIDAE

Lachesilla bernardi Badonnel

Lachesilla bernardi Badonnel, 1938: 19.

Material examined. 98-04, 4♂, 14♀; 99-02, 1♂; 99-13, 1♂; 99-15, 1♀.

The species was known previously primarily from the circum-Mediterranean sub-region of the Western Palaearctic, eastward to Turkey and locally north into central Europe (Lienhard, 1998). The present records constitute a significant eastward extension of the known range.

Lachesilla pedicularia (Linnaeus)

Hemerobius pedicularius Linnaeus, 1758: 551.

Lachesilla pedicularia (Linnaeus). Enderlein, 1919: 16.

Material examined. 98-04, 3♂, 5♀; 98-05, 2♂, 1♀; 98-06, 1♂, 1♀; 98-07, 1♂; 98-09, 1♂; 98-14, 1♀; 98-15, 1♂, 1♀; 98-22, 1♂; 99-05, 1♂; 99-08, 1♂; 99-13, 1♀; 99-21, 1♂.

The species is nearly cosmopolitan in distribution (Lienhard, 1998; Mockford, 1993). It is known from Uzbekistan (Danks, 1968) and Mongolia (Günther, 1974).

Lachesilla quercus (Kolbe)

Caecilius quercus Kolbe, 1880: 120.

Lachesilla quercus (Kolbe), Enderlein, 1919: 19.

Material examined. 98-04, 1♂, 3♀; 98-11, 3♂, 7♀.

The species is widely distributed in the Palaearctic region and is known eastward to Mongolia (Günther, 1974).

Lachesilla tanaidana Roesler

Lachesilla tanaidana Roesler, 1953: 297.

Material examined. 98-01, 1♂, 7♀ M (= macropterous); 98-02, 2♂; 98-03, 26♂, 10♀ M; 98-07, 3♂; 98-09, 1♂; 98-10, 1♂; 98-17, 9♂; 98-19, 1♂; 98-20, 7♂, 1♀ br (= brachypterous); 99-16, 7♂, 1♀ M, 5♀ br; 99-21, 6♂, 1♀ M; 99-26, 37♂, 2♀ M, 32♀ br, 29 nymphs; 00-01, 2♂, 1♀ M; 00-02, 1♂; 00-03, 1♂; 00-04, 1♂; 00-05, 1♂; 00-06, 1♀ br, 7 nymphs; 00-07, 1♂, 3♀ br; 00-09, 1♀ br; 00-10, 1♀ M; 00-11, 6♂, 11♀ br, 5 nymphs; 00-12, 1♂; 00-13, 1♀ br; 00-14, 1♂.

The species is known from central and eastern Europe, and in Mongolia and eastern Russia (Lienhard, 1998). It was one of the commonest species in the Kyrgyzstan material, occurring at elevations from 927 to 1826 m.

MESOPSOCIDAE

Mesopsocus unipunctatus (Müller)*Hemerobius unipunctatus* Müller, 1764: 66.*Mesopsocus unipunctatus* (Müller), Kolbe, 1880: 112.

Material examined. 99-17, 11 ♂, 24 ♀; 99-18, 1 ♀.

The species is known throughout Europe north of the Mediterranean region and eastward to the European components of the former USSR (Lienhard, 1998). It is also known from Sakhalien, Kunashir, and Japan (Vishniakova, 1986), but it is not clear from the existing literature how continuous across Asia its range may be.

Mesopsocus bousemani sp. n. (♀)

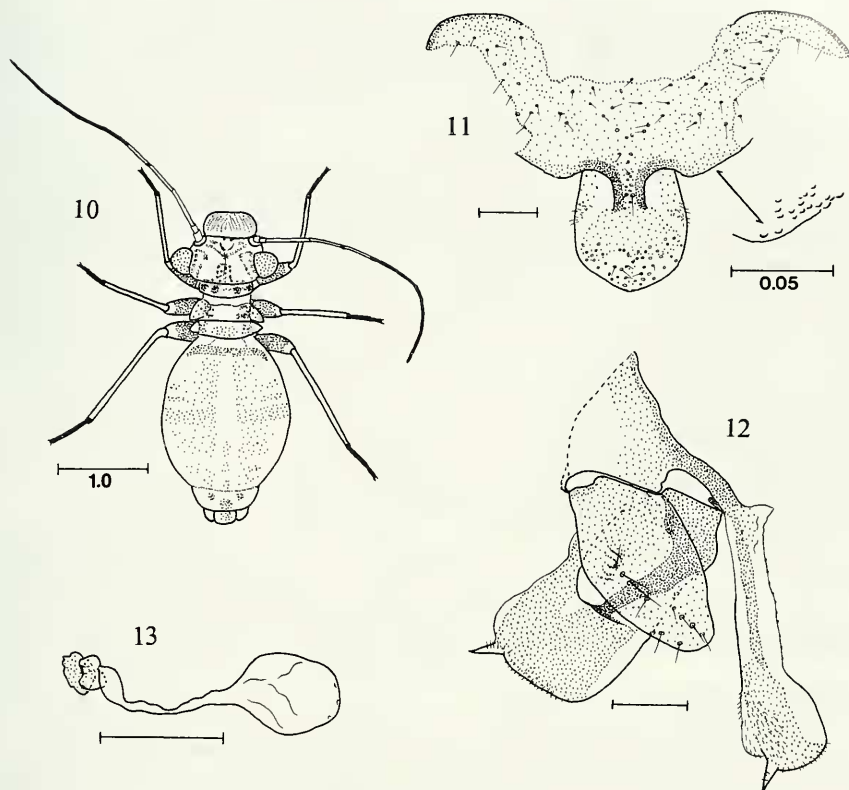
Figs 10-13

Material examined. Holotype ♀, 66 ♀ paratypes, 37 nymphs, 99-17; 99-03, 7 nymphs; 99-06, 1 ♀ paratype; 99-07, 22 ♀ paratypes, 6 nymphs; 99-09, 2 ♀ paratypes; 99-10, 1 ♀ paratype; 99-18, 1 ♀ paratype; 99-22, 26 ♀ paratypes, 50 nymphs; 00-07, 1 ♀ paratype; 00-14, 1 ♀ paratype.

Differential diagnosis. Known only from female. Habitus (Fig. 10). Running to *M. graecus* Lienhard in the key of Badonnel & Lienhard (1988), similar to that species in size but differing in A/B index (cf. Badonnel & Lienhard, 1988, fig. 33b) for this species ~ 2.24 vs. ~ 1.2 for *M. graecus*, details of the ovipositor valvulae, leg coloration, and form of the winglets (type B vs. type A in *M. graecus*, cf. Lienhard, 1998, fig. 109p). Similar to *M. badhysi* Kaplin (1990) in body length and shape of subgenital plate differing in details of distal lobe of the subgenital plate, also in smaller compound eyes, longer fore-winglets, larger index $t1/t2+3$ (~ 2.2 vs. ~ 1.2 in *M. badhysi*, cf. Kaplin, 1990, fig. 6) and details of ovipositor valvulae. Differing from *M. apterus* Kaplin (1990) in much larger index antennal length/body length (~ 1.00 vs. 0.54-0.69 in *M. apterus*), much larger fore-winglet length (0.22 mm vs. 0.10-0.12 mm in *M. apterus*), in having 7-8 trichobothria on the paraproctal sensillum vs. 4 in *M. apterus*, and in details of the subgenital plate (cf. Kaplin, 1990, pl. 2, figs 1, 2, and p. 145, table).

Color. Compound eyes charcoal gray. Remainder of head creamy white with dark brown marks; those seen dorsally as indicated in figure 10; laterally a row of three spots below each eye. Antenna: scape dark brown, pedicel and f1 white, f2 pale brown, f3 darker, remainder of flagellum dark brown. Thorax dorsally creamy white marked with dark brown as indicated in figure 10; laterally creamy white variegated with medium to dark brown, the darker pigment along suture lines. Legs: coxae medium brown; trochanters white; femora dark brown except white ventrally and at distal ends; tibiae white but dusky brown at extreme distal ends; tarsi dark brown. Abdomen (Fig. 10): Preclunial segments with dark brown saddle mark basally, remainder with extensive grayish-brown subcuticular pigment usually absent along colorless dorsal midline of variable width; fifth tergum with a transverse band of rather concentrated grayish-brown interrupted by the dorsal midline. Terminal segments variegated creamy white and dark brown, the subgenital plate dark brown.

Structural characters. Micropterous, lacking ocelli. Antennae approximately as long as body, with three small placoid sensilla at base of f1, a placoid sensillum at dis-



FIGS 10-13

Mesopsocus bousemani sp. n., female. 10. Habitus, dorsal view. 11. Subgenital plate and enlargement of left shoulder region showing granular surface. 12. Ovipositor valvulae. 13. Spermatheca. Scale bars = 0.1 mm unless noted otherwise.

tal end of f4 and f10, but not f6. Antennal setae sparse and short, strongly slanting distally. Mouthparts typical of the family (cf. Badonnel & Lienhard, 1988). Winglets of type B (cf. Lienhard, 1998). Hind leg: coxa with small mirror and rasp; tarsi lacking ctenidiobothria, t1 with two longitudinal rows of spines becoming somewhat thicker towards distal end of row and terminating in a strong spur; pretarsal claw of type A (cf. Badonnel & Lienhard, 1988, fig. 28). Subgenital plate (Fig. 11): basal region relatively thick in middle, with slender arms curving posteriad; shoulders of basal region granulate; distal lobe similar to type e (cf. Badonnel & Lienhard, 1988, fig. 33e) in shape, but without distal connection between the two sclerotized traps; distal lobe bearing microtrichs on edges and small setae and trichoid sensilla distally and on isthmus. Ovipositor valvulae (Fig. 12): typical of the genus; orientation of v2 to v3 at a slightly acute angle. Spermatheca (Fig. 13) very small, the sac partially collapsed. Paraproct with a rounded sensorium bearing 7-8 trichobothria on faint basal rosettes; lacking marginal hyaline cone. Epiproct setose with numerous long marginal setae.

Measurements. BL = 3620, FW = 224, HW = 149, F = 694, T = 1347, t1 = 389, t2 = 67, t3 = 108, f1 = 461, f2 = 398, f3 = 351, f4 = 309, IO = 671, d = 240, IO/d = 2.79.

Etymology. The species is named for my long-time friend, John K. Bouseman, who collected all but a few of the specimens.

Note. The presence in the material of only females and nymphs, the absence of any indication of macroptery in the nymphs, and the small size of the spermatheca with its thin-walled, wrinkled sac all suggest that this species is parthenogenetic. If so, this is the fourth example of parthenogenesis in the genus *Mesopsocus*. The other three are *M. apterus* from Turkmenistan (cf. Kaplin, 1990), *M. duboscqui* Badonnel from the Mediterranean region, and *M. giganteus* Lienhard from Italy (cf. Lienhard, 1998).

PSOCIDAE

Blaste (Euclismia) conspurcata (Rambur)

Psocus conspurcatus Rambur, 1842: 323.

Blaste (Euclismia) conspurcata (Rambur), Smithers, 1967: 93.

Material examined. 98-08, 5 ♀, 31 nymphs; 98-21, 1 ♀; 99-22, 1 nymph; 00-07, 1 nymph.

The species has a wide range throughout the Palaearctic region, including most of Europe and eastward to Mongolia (Lienhard, 1998).

BIOGEOGRAPHICS

The material gives the impression of a rather impoverished psocid fauna. This impression is probably due in part to relatively harsh environmental conditions for this group of insects, but it is also due in part to bias in collecting effort and limited collecting methods. Several members of the expeditions informed me that collecting was strongly biased towards leafhoppers, and that most collecting time and effort was spent in steppe grassland and shrubland, relatively little in forest and desert biotypes. It is likely that many more species of psocids would have been found if more collecting had been done in forest areas, and if such habitats as ground litter, under-surfaces of rocks, bark of tree trunks and branches, and bird and mammal nests had been sampled.

As would be expected, most of the species taken are those adapted to semi-arid steppe shrub- and grasslands. The Lachesillidae, the family best represented, had four species, all of which can be found in the steppe shrub- and grasslands of eastern Europe. In Kyrgyzstan, they are probably straggling towards their eastern limits.

The species of *Asiopsocus* are also steppe shrubland forms. The present records and other recent finds suggest that representatives of this genus will prove to be relatively ubiquitous in the appropriate habitats of the northern hemisphere.

Only four woodland species were taken: *Graphopsocus cruciatus*, the two *Mesopsocus* species, and *Blaste conspurcata*. It is likely that more woodland species exist in Kyrgyzstan.

The only possible endemics are the two new species. *Asiopsocus spinosus* was taken at only a single locality, which was the highest place (3880 m) at which psocids were taken, and it was the only species taken there. It may prove to be either endemic

or restricted to high altitudes in the region. *Mesopsocus bousemani* was more widely distributed, having been found at four localities with an altitudinal range of 1630-2300 m. Thus, it may prove to have a wide distribution in central Asia.

ACKNOWLEDGEMENTS

I thank C. H. Dietrick and J. K. Bouseman for arranging the loan of the Kyrgyzstan material, R. Rakitov and S. Shulman for translations from Russian, and C. Lienhard for critical reading and useful comments on an earlier draft of this paper.

REFERENCES

- BADONNEL, A. 1938. Psocoptères de France (9^e note). Diagnoses préliminaires et nouvelles captures. *Bulletin de la société entomologique de France* 43: 17-22.
- BADONNEL, A. 1986. Psocoptères du Senegal. III. Liposcelidae (Psocoptera). *Nouvelle Revue d'Entomologie (Nouvelle Série)* 3: 69-76.
- BADONNEL, A. & LIENHARD, C. 1988. Révision de la famille des Mesopsocidae (Insecta, Psocoptera). *Bulletin du Muséum national d'Histoire naturelle, Paris* 4^e sér., 10, section A, no. 2: 375-412.
- DANKS, L. 1968. Catalogue of the Psocoptera of the USSR. *Latvijas Entomologs* 12: 3-18.
- ENDERLEIN, G. 1919. Copeognatha. *Collections Zoologiques du Baron Edm. de Selys Longchamps. Catalogue systématique et descriptif* 3(2): 1-55, pls I-V.
- GARCÍA ALDRETE, A. N. & CASASOLA, J. A. 1995. A new species of *Asiopsocus* from Puebla, Mexico. *Acta Zoológica Mexicana* (n.s.) 66: 23-29.
- GÜNTHER, K. K. 1968. Staubläuse (Psocoptera) aus der Mongolei. *Mitteilungen aus dem Zoologischen Museum in Berlin* 44: 125-141.
- GÜNTHER, K. K. 1974. Psocoptera of the Mongolian People's Republic. *Insects of Mongolia* 2: 34-50. (In Russian with German summary).
- JACOBSON, G. G. & BIANCHI, W. L. 1904. Die Orthopteren und Pseudoneuropteren des Russischen Reiches und der angrenzenden Länder. *St. Petersburg*. (Psocoptera: pp. 482-496).
- KAPLIN, V. G., 1990. New species of the genus *Mesopsocus* from Turkmeniya. *Zoologicheskij Zhurnal* 69: 142-147 (in Russian).
- KOLBE, H. J. 1880. Monographie der deutschen Psociden mit besonderer Berücksichtigung der Fauna Westfalens. *Jahresbericht des Westfälischen Provinzial-Vereins für Wissenschaft und Kunst* 8: 73-142, pls. I-IV.
- LI FASHENG. 2002. Psocoptera of China. *National Natural Science Foundation of China, Beijing*, xlv + 1976 pp., pls I-X (two volumes).
- LIENHARD, C. 1981. Neue und interessante Psocopteren aus Griechenland, Spanien und Portugal. *Deutsche Entomologische Zeitschrift, Neue Folge* 28: 147-163.
- LIENHARD, C. 1990. New records and synonymies in western Palaearctic Psocoptera. *Deutsche Entomologische Zeitschrift, Neue Folge* 37: 205-212.
- LIENHARD, C. 1995. Psocoptères (Psocoptera) nouveaux ou peu connus d'Italie, de Chypre et du Yémen. *Mitteilungen der schweizerischen entomologischen Gesellschaft* 68: 335-361.
- LIENHARD, C. 1998. Faune de France 83. Psocoptères Euro-Méditerranéens. *Fédération Française des Sociétés de Sciences Naturelles, Paris*, xx + 517 pp., pls 1-11.
- LIENHARD, C. & SMITHERS, C. N. 2002. Psocoptera (Insecta): World Catalogue and Bibliography. *Instrumenta Biodiversitatis* 5: xli + 745 pp. *Muséum d'histoire naturelle, Genève*.
- LINNAEUS, C. 1758. *Systema Naturae* etc. Ed. 10. *Holmiae*. 2 vols.
- LINNAEUS, C. 1768. *Systema Naturae*. Ed. 13. *Stockholm*.
- MOCKFORD, E. L. 1993. North American Psocoptera (Insecta). *Sandhill Crane Press, Gainesville FL and Leiden, Netherlands*, xviii + 455 pp.

- MOCKFORD, E. L. & GARCÍA ALDRETE, A. N. 1976. A new species and notes on the taxonomic position of *Asiopsocus* Günther (Psocoptera). *Southwestern Naturalist* 21: 335-346.
- MÜLLER, O. F. 1764. Fauna insectorum Fridrichsdalina. *Hafniae et Lipsiae*, xxiv + 96 pp.
- PEARMAN, J. V. 1925. Additions to the British psocid fauna. *Entomologist's Monthly Magazine* 61: 124-129.
- RAMBUR, J. P. 1842. Histoire naturelle des insectes. Névroptères. *Paris*, xviii + 534 pp., 12 pls.
- ROESLER, R. 1953. Zwei neue Lachesilla-Arten (Psocoptera). *Entomologische Berichten* 14: 295-300.
- SMITHERS, C. N. 1967. A catalogue of the Psocoptera of the world. *Australian Zoologist* 14: 1-145.
- VISHNIAKOVA, V. N. 1986. Psocoptera (Copeognatha) (pp. 323-357). In: LER, P.A. (ed.). Identification of insects of the Far East of the U.S.S.R. *Leningrad*. (In Russian).